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ABSTRACT

This publication discusses differential rationality; it asserts that the development of institutions, professions, and individuals involves the differentiation of forms and styles of thinking and knowing that are, in various ways, idiosyncratic. Based on this understanding, differential rationality can be seen as a developmental construct that reflects the subject's readiness or competency in dealing with changing demands. The publication discusses different modes of rationality, including institutional, legal, technical, economic, political, and personal. It also addresses cognitive styles, decision making, problem solving, and personal knowledge. The discussion then explores the implications of differential rationality for personal development, including the stages of personal development (student and adult). It concludes with a discussion of how concepts of differential rationality and personal development may provide useful insights and perspectives with which to consider many problems and issues in higher education. (Contains 74 references.) (EV)

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DIFFERENTIAL RATIONALITY AND PERSONAL DEVELOPMENT

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FOREWORD

This unpublished paper was originally prepared for a workshop on "Conceptual and Administrative Leadership in Student Personnel Divisions" at Ohio State University in July 1977. At that time the rationality of universities and colleges was seriously questioned by "a new generation of critics" who were much too impatient with the previous generation's solutions to "the problems of the sixties." My intent in writing a paper on differential rationality was to identify the many ways in which legal, technical, economic, political, and social issues are resolved in a rapidly changing society.

My "rational thinking" about the relevance of differential rationality to personal development was influenced by two "great and formative" ideas identified by Jacob Bronowski and Bruce Mazlish (*1960*) in their book, "The Western Intellectual Heritage":

> The first is the emphasis on the full development of the human personality . . . The second . . . is freedom of thought and speech: the right to dissent.

The idea of self-fulfillment, they add, has become part of larger, more encompassing ideas—and has influenced science and technology in their efforts to liberate individuals from the "drugeries" of life and to give them "the ease and leisure to find the best in themselves."

Unfortunately, it would seem that science, technology, and rationality itself are often regarded as de-humanizing—and a "perennial philosophy of life" calls for a return to our "natural" instincts and dispositions. Implicit in such appeals are promises that human relations and personal experiences are "more natural" when unencumbered by intelligent thought, observation, and discussion.

Thus, if my "rational thinking" does not deceive me, the similarities of current "irrationalities" and those of the 1964-1974 era, warrant the publication of this paper written twenty-three years earlier.

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DIFFERENTIAL RATIONALITY AND PERSONAL DEVELOPMENT

Rationality is often discredited because it is imperfect. The limitations of human reason and judgement are observed and a host of dubious inferences may follow, depending on the arguments of the moment. Cynics may contend that since we are not rational all the time, there is little trust to be placed in the few moments when we are. Rationality is regarded by others as an unnatural imposition on our preferences for intuitive or non-linear modes of thinking. Idealists may argue that rationality, or our pretensions to such, stifles many efforts to be creative in expressing humanistic or aesthetic impulses. Others decry the restrictions that rationality places on personal development or self-actualization.

There are many ways to define rationality. Each of us encounters different ways of making decisions, solving problems, and resolving conflict at various stages of our personal development. We are often amazed with the apparent lack of open, fair, consistent methods by which to handle the problems and issues that concern us. We suspect, in many incidents, that whim and caprice have affected judgements that should have taken longer, been more circumspect, and fully recognized their implications. We sometimes conclude that chance is the determining factor in decisions that deny a more logical choice.

The explanation does not lie in simplistic distinctions between rationality and irrationality. Nor is rationality merely a function of preference or desire on the part of administrators, judges, legislators, elected officials, and others in positions of authority. Differential rationality thus is evident at different levels in different areas of personal concern. Schools, churches, hospitals, and other social agencies do things their own way. Military duties, corporate employment, public service, and community involvement require that we respond differentially. What obviously makes sense in one situation is clearly nonrational in another. Truth, as we often suspect, has an intriguing sense of time and place.

For higher education, the relativity of knowledge has acquired special meaning with the advent of pluralism and diversity; its own forms of rationality have been severely challenged by sociocultural conflict that is much too intense. At a time when colleges and universities have been indefensible against different modes and styles of thinking, they have been subjected to great pressure to rationalize their internal operations and functions. Both forms of pressure have been relentless.

The increased enrollment of women, ethnic and minority group members, and adult or part-time students has been accompanied by pressures to diversify academic programs, standards, and outcomes. The different needs and expectations of different students have called for other kinds of program content, sequence, and evaluation; alternative routes of progression; and new ways of assessing the outcomes of education. The pluralistic experiences of students require a diversification of teaching styles and instructional modes; degree structures; and extracurricula functions and activities.

The intensity and implications of sociocultural conflict are seen in different values and attitudes; the advocacy of alternative lifestyles and living arrangements; the openness of a counterculture; and the appealing re-assertion of what Aldous Huxley (*1945*) called "the perennial philosophy". Science, technology, and tradition have been examined with expectations that other alternatives and options were open—and more attractive. Scholarly detachment and objectivity have been rejected in favor of personal forms of knowledge and more direct, immediate methods of inquiry. Traditional criteria for verification and proof have been replaced quite often by personal preferences. ✣

DIFFERENT MODES OF RATIONALITY

The meaning of differential rationality should not be regarded as a sociology of knowledge that equates truth with ideological commitments, economic class, or cultural conditioning. Thought and belief are culturally determined and frequently cannot escape the influence of personal bias (*Cole, et al., 1971*). It is necessary, however, to understand the distinctions that both Mannheim

(*1940*) and Weber (*1947*) made between substantial and functional rationality. The latter is defined in terms of its organization and its efficiency in producing dependable results. Substantial rationality, the broader concept, must correspond with better measures of effectiveness. For most situations, differential rationality may be identified as organized efforts that serve some purpose and are predictable from their antecedents.

A more immediate and practical identification of differential rationality can be inferred from the differences in decision making, problem solving, and conflict resolution that are evident in social institutions, professional specialties, and individual behavior. The development of institutions, professions, and individuals involves the differentiation of forms and styles of thinking *and* knowing that are, in various ways, idiosyncratic. The particular forms and styles evolved or perfected are, in part, a function of the organization's historical development; its particular goals, purposes, or functions; and its own internal dynamics. Used in this way, differential rationality is a developmental construct that reflects the subject's readiness or competency in dealing with changing demands. The problem solving efforts of a child, for example, differ in many respects from the more sophisticated, stylized procedures of an adult.

In brief, social institutions—the family, community, church, school, government, industry, business, university—will make decisions, solve problems, and resolve conflict in ways that are peculiar to their own functions and development. Professional specialties will "professionalize" newcomers through extended programs of preparation emphasizing particular ways of making decisions and solving problems. The individual may develop personal styles for coping with the decisions, problems, and conflicts that are involved in personal growth and maturity. ✣

Institutional Rationality

The institutional forms of differential rationality may be identified as economic, legal, technical, and political rationality. Each mode or style of rationality apparently is involved in all social institutions and professional specialties to some extent.

Governmental agencies must be responsive to legal, technical, and economic rationality even when political rationality is predominant. Banking and financial institutions, although predominantly economic in purpose and direction, are influenced by legal and technical requirements and cannot be immune to political influence. National and state judicial systems obviously have economic and technical problems and undoubtedly know the pressures of political rationality. Yet each of the four forms constitutes a particular force within social institutions and professional associations. While each is present to some extent in most societal agencies or organizations, the dominance of one or more would depend upon the overall mission and historical development of the agency or organization. The rationality of economic, legal, technical, and political institutions is differential, therefore, in the sense that each mode of rationality serves different objectives and expectations. ✣

Legal Rationality

Legal rationality is primarily concerned with the achievement of social justice and has been the dominant form of conflict resolution in a society characterized by group interests. The access of minority and ethnic groups to higher education, their participation and involvement in societal benefits, and their representation in privileged occupations or professions have been crucial issues for several decades. In a society where group conflict is pronounced, the legal rationality of courts and quasi-legal agencies have been regarded by disputants as a means of resolving conflict. Such acceptability may be due to the fact that courts of law have more often concerned themselves with procedural justice than substantive issues and have been able to specify means by which disputants could eventually agree on matters of content or substance. Legal rationality may also have been acceptable during the past decade because it has drawn heavily from concepts of justice-as-fairness rather than from utilitarian doctrines involving optimal benefits for a maximum number of litigants (*Diesing, 1962*).

As a form of conflict resolution in higher education, however, legal rationality is not without difficulties. Critics and traditionalists believe litigation to deteriorate into excessively narrow molds of legalism and to be overly concerned with procedure or process to the detriment of both substantive justice and academic integrity. They also believe that while the quest for social justice is a worthy one, it is an external societal objective imposed upon institutions of higher education for societal reasons and not for educational or academic purposes (*Fincher, 1975a*). ✣

Technical Rationality

The advocacy of technical rationality has been relentless for other reasons. The problems and issues of higher education are perceived by many outside observers as exceeding the problem-solving capabilities of college and university leaders. The transfer of problem-solving techniques from other institutions and organizations is believed necessary to ensure managerial efficiency, to provide acceptable forms of resource accountability, to improve instructional effectiveness, and to increase faculty productivity. Traditional or institutional specific methods of academic administration, fiscal accounting, knowledge dissemination, and faculty workload assignments are believed to be technologically unsound or counter-productive.

The expected outcome of technical rationality is improvement or progress. Science and technology are believed to represent rational thinking at its best and their methods are believed applicable to the bulk of societal problems. Technological innovation has direct implications for economic growth and has been perceived as a permanent, progressive force in industrial societies (*Mesthene, 1970*). The advocacy of technology transfer pertains to the inter-organizational dissemination and application of techniques found successful.

Computer and communications technology are prominent in the advocacy of technical rationality. Systems analysis, operations research, and management science have been recommended, with particular emphasis, for institutions of higher education perceived

as lacking the system, order, or organization so sorely needed to solve internal problems of planning, management, instruction, and evaluation. Specific examples are program budgeting, management-by-objectives, and zero-based budgeting. Each would produce progressive change in the way institutions of higher education are managed, financed, and evaluated (*Fincher, 1975b*).

The application of technical rationality can be seen more directly, however, in the design and development of instructional systems that would capitalize on the advantages of computer and communications technology. The inefficiency of classroom instruction as a means of disseminating knowledge has been frequently demonstrated, and the advantages of instructional systems have been documented for many kinds of instruction. A decided disadvantage of such instructional systems, however, is that they alter substantially the traditional roles of teaching faculty in the nation's colleges and universities. Successful implementation may be possible only through a complete change in personnel. ✣

Economic Rationality

The advent in the early seventies of a financial crisis has given special meaning to economic rationality. Priorities must be established in a period of limited or decreasing resources for activities and functions poorly adapted to concepts and measures of economic efficiency (*SREB, 1976*). The efficiency of resource allocation and utilization in periods of rapid growth and expansion is not demanded in the same manner that it is during periods of retrenchment or limited growth.

Analysis of cost/effectiveness or cost/benefits poses a significant problem for academic administrators who have not previously regarded themselves as concerned with efficiency, productivity, or resource utilization. Funding is a perennial problem for all institutions and budgeting may be an annual ordeal, *but* financial resources have not been regarded as limited as often as they have been reluctantly provided. Educational benefits, though more often assumed than demonstrated, have not been thought amenable to cost accounting. Nor have the purposes of a college

education been perceived exclusively in terms of the economic benefits awaiting the student upon graduation.

The challenge of economic rationality becomes more severe as colleges and universities deal with declining enrollments in the age group of young adults traditionally attending college at a time when costs continue to rise. Economic rationality has the advantage of specific, fairly concrete criteria—efficiency, profit, return-on-investment—that are acceptable to decision and policy-makers and readily communicable to the general public. Waste, inefficiency, and mismanagement are sources of abuse that can be identified with reasonable assurance and presumably corrected with systematic planning and management. ✣

Political Rationality

The importance of political rationality is readily appreciated in a society dominated by group conflict. Political rationality is believed to have a special affinity for certain kinds of decision making and conflict resolution—the major implication being, of course, that political wisdom will often prevail where other problem-solving efforts are futile. Yet, political rationality is often suspected of being somewhat nonrational in the sense of resolving complex issues or solving immediate and specific problems in a manner that is satisfactory to all participants. Political decisions are thought to result too frequently in compromises, trade-offs, or blatant *quid pro quos* that defy other expectations for rational decision making.

Despite its sometimes unsavory reputation, political rationality has an appeal of its own, just as legal, economic, and technical rationality have distinct advantages. Political decisions call for group participation in a way that may be absent in other forms of rationality and often maintain an inconclusiveness that leaves related decisions and choices open for further deliberation. A basic premise of political decision making is the belief that the decision must not be permitted to destroy or terminate the decision-making structure that has been established for purposes of making decisions. In short, there is a definite assumption that since political rationality involves bargaining, negotiation, and

compromise, the structure or procedures for such necessities may be more important than the products themselves. More specifically, the process of political decision making is regarded as more relevant than the products of political process.

As a specialized form of rationality, political decision making and conflict resolution are often maligned because: (a) participants can frequently maintain anonymity; (b) the preferences and values of political leadership are frequently unspecified; and (c) the inherent vagueness of the process does not suggest rational-deductive modes of problem solving such as technical rationality does (*Fincher, 1975*). But in many respects, political rationality is the fundamental application of reason in social institutions because it is basically an agreement on how agreements can be reached (*Diesing, 1962*). ✣

Personal Rationality

Social or interpersonal relations are believed to have a rationality independent of legal, technical, economic, and political rationality. As social roles and norms are developed, systematic qualities suggesting differential rationality are much in evidence. Social relations are dependent upon modes of thinking and knowing that are organized, purposive, and predictable. Social organizations frequently display a personality and a character that are apparently unique.

The possibility of peculiar modes or styles of rationality raises several questions concerning the extent to which rationality is general or specific—and the extent to which it can be personal or individualistic. A sociology of knowledge does not adequately explain the individual's inability to escape the relativity of his knowledge. Social class, economic advantage, or political ideology are presumed to be the determinants of the individual's beliefs and values, aided by certain tendencies to be self-consistent. Yet there are reasons to believe both social and personal belief systems, as well as modes of rationality, can be idiosyncratic. Psychoanalytic theory has delineated modes of adjustment that are quite rational in terms of the patient's internal conflicts but nonrational from the standpoint of parents, spouses, other

relatives, and friends. A classic defense mechanism is rationalization in which the individual has given reasons or causes that might be acceptable to others. The plausibility of such reasons may strain the credibility of the individual, but the compulsion to give an ostensibly logical and reasonable explanation is indicative of human needs to live in a rational world. Rationalizations, even when weak, still have face-saving properties. The genius of Freudian psychology is the discovery of unconscious, hidden-but-consistent reasons for nonrational behavior. Given an understanding of those reasons, the behavior then acquires a rationality it did not have previously. The extent to which we should label such behavior personal rationality, however, may be debatable.

The failure to consider institutional or organizational differences may be responsible for the lack of immediate success that often accompanies the transfer of general problem solving techniques from organization to organization. Technology transfer is dependent upon organizational similarities that will permit the diffusion and adoption of successful methods, techniques, or procedures. Similarities have often been assumed, however, rather than demonstrated and the transfer of some techniques for decision making and problem solving has been noticeably ineffective because they did not take into consideration the traditions, values, and unique differences of the organization to which they were being transferred (*Fincher, 1975b*). Systems analysis as a generalized problem-solving approach in government and education has received intense criticism (*Hoos, 1972*). Program budgeting, management-by-objectives, and more recently, zero-based budgeting have been strongly advocated and ineffectively applied.

Both the general and the specific features of different decision-making and problem-solving methods should be examined carefully. Scientific method is no longer advocated as a unified, comprehensive approach to societal, governmental, and educational problems that needs only to be adopted and carefully applied. Nor does technical, legal, economic, or political rationality qualify for complete, integrative, or comprehensive solutions. Each approach is effective in dealing with only certain aspects of societal, governmental, and environmental situations—and if

applied without consideration for their impact on other components of the problem situation, may contribute to the complexity of the overall problem instead of its solution. ✣

Cognitive Styles

A subject of much speculation in recent years has been that of cognitive styles. Individual variation in perceptual habits, creative efforts, conceptual grasps, and problem solving approaches is clearly related to sexual and cultural differences and is believed to have particular relevance for choices in career, education, and personal living (*Messick, et al., 1976*). The underlying personality characteristics of individuals are thought to produce remarkable consistencies in cognitive styles and creative expression. These consistencies are said to represent a mode of mental functioning that is characteristic of the individual and, may be regarded for purposes of investigation, as his or her preferred way of seeing, remembering, thinking, and learning.

Witkin (*1977*) has identified a cognitive style that reflects the individual's dependence on, or independence of, field or background variables in complex stimulus situations. This style has been the most systematically studied of numerous cognitive styles suggested, is derived from sound research in the area of perception, and represents a consistent tendency to perceive situations either analytically or globally. Witkin was especially interested in the implicatons that field-dependent and field-independent styles have for learning, teaching, career guidance, and academic advisement.

Other cognitive styles that have been identified, and studied with varying degrees of thoroughness, deal with the individual's consistency in using conceptual categories, the width or range of those categories, the extent to which they might be compartmentalized, and the complexity or specificity they might denote. Other cognitive styles consider the individual's inclinations to take risks in choice situations, whether his thinking is characteristically convergent or divergent, and whether the individual's mental set is basically open and receptive or narrowly focused and perhaps closed (*Harvey, Hunt, & Schroder, 1961*).

Professional training, preparation, and experience apparently account for numerous "stylistic variations" in engineers, research scientists, teachers, physicians, and other professions where an extensive process of "socialization" or "professionalization" is concerned. The legal profession is explicit in its expectation that legal training will prepare practitioners "to think like a lawyer". The diagnostic skills of physicians represent an area of competency in which the interplay between professional consensus and stylistic variations can be quite challenging (*See Elstein, et al.*).

Although cognitive styles are habitual modes of functioning, they are not regarded as habits to be acquired through traditional modes of instruction. Nor are they seen as abilities. More questionable is the extent to which cognitive styles are similar to, or related to decision-making strategies and rules that are apparently developed by individuals; determined by individual values and personal experience; or merely an idiosyncratic dimension of personality. In other words, there are serious questions as to whether cognitive styles represent more than perceptual tendencies or preferences; whether they can be identified with sufficient inter-personal agreement for purposes of selection, classification, and placement; and whether they can account for individual differences in decision making and problem solving. A tentative conclusion might be that while cognitive styles present a promising field of research, they are not sufficiently understood for any kind of systematic application in education. ✣

Decision Making

The literature on decision making is quite rich in its implications for improving human rationality. Decision theory has commanded the attention of mathematicians, statisticians, economists, and psychologists who have seen in decision and choice a basic, fundamental handle with which to grasp human behavior. Administrative decision making has been of special interest to researchers who believe decision making to be the basis of administrative rationality (*Simon, 1957; Gross, 1964; Miller & Starr, 1967*). Consumer decisions are, almost needless to say, crucial to business and commerce (*Hansen, 1972*).

There is appreciable difficulty, however, in relating decision theory and its implications to human behavior. Decisions made in hypothetical choice situations lack considerable compatibility to the urgencies and press of decisions made in the business office, at the sales counter, on the battlefield, in the home, and during a committee meeting. Virtually no human decisions have the simplicity and ordered dimensions of the ideal rationality implied in normative studies of choice and judgement. Decisions that vitally concern individuals and groups, without exception, tend to be more complex, situationally bounded, and subject to boredom, fatigue, and distractions. Yet the application of decision theory to human problems and experience continues to be quite promising (*Lee, 1971; Miller & Starr, 1967; Edwards, Lindman, & Phillips, 1965; Taylor, 1965*).

Janis and Mann (*1977*) have investigated the processes of decision making in such personal matters as choosing a career, getting married, getting a divorce, going on a diet, quitting smoking, undergoing surgery, and meeting other crises of an intimate or emotional nature. The range and scope of decisions dealt with are indicative of decisions that must be made by individuals under conditions of risk, uncertainty, competition, and ignorance.

A basic premise of Janis and Mann's work is the belief that many personal decisions must be made under conditions of stress and most of us are, by virtue of that fact, a reluctant decision maker. They propose a conflict model of decision making that takes into consideration the stress of human choices—one that is descriptive of human choice behavior and not merely prescriptive of rational decision making by hypothetical decision makers. Decisions must be studied in terms of the multiple objectives involved for the decision maker and must be understood in terms of the restrictions that real-life situations impose.

The procedural criteria identified by other researchers for effective decision making are, according to Janis and Mann, ideal but the failure to: (1) canvas alternatives, (2) survey objectives, (3) weigh costs and risks, (4) search for new information, (5) assimilate new information or expert opinion, (6) reexamine consequences, and (7) make detailed plans for implementation—may constitute

defects in the decision-making process. The more defects present in the decision, the more the individual is likely to experience post-decisional regret. The gist may be that despite the ideal or normative aspects of hypothetical decision making, the steps or procedural criteria implied are still good advice. The logical steps implied in the criteria suggest areas in which decision makers are most likely to make miscalculations or errors of judgement. Attempts to follow such steps can reduce the complexity of decision-making situations.

Decision making obviously requires search, deliberation, and selection strategies. Impressionistic and anecdotal studies of decision making have emphasized strategies of optimizing specific outcomes, but human limitations in information processing imply that Simon's (*1957*) notion of satisficing is a more realistic expectation. Janis and Mann suggest that the decision rules adopted by the decision maker require different orientations and it should be helpful to understand the conditions under which decision strategies are selected from the decision maker's repertoire of strategies.

The model presented by Janis and Mann may not be as informative as the research data from which they construct the model. The model is predicated, nonetheless, on the premises that decisional conflict induces stress that is: (1) directly related to the number of unfulfilled goals, (2) influenced by commitments to present courses of action, (3) likely to produce defensive avoidance when serious risks are involved, (4) increased with a lack of time to resolve decisional conflict, and (5) more likely to produce vigilant efforts when moderate in degree. Five basic patterns of coping behavior are identified as: (1) inertia without conflict, (2) change without conflict, (3) defensive avoidance, (4) hypervigilance, and (5) vigilance of an adaptive or constructive kind.

Janis and Mann describe well five stages of decision making that are similar to other descriptions of the decision process. They differ from other model builders, however, by pointing out how the stages of decision making might be prolonged and how the stages might be mediated by decisional conflict. Their

treatment of decision making has the added advantage of showing commitment as an expected outcome of the process. Also suggested are possibilities for interventions that would bolster the positive aspects of the decision or offset the likelihood of post-decisional regret.

A major criticism of decision theory and research is the failure to satisfy both descriptive and prescriptive expectations. Neither describes adequately the complex process of human decision making, and neither offers great help in suggesting ways and means by which we can make decisions more effectively. Yet the status of theory and research is sophisticated, and the literature on decision making warrants careful attention.

Decision theory contributes an awareness of subjective probability, psychological value, and subjectively expected utility that should be better understood. The conditions of decision making, such as risk and uncertainty, offer a framework within which to view a broad range of decisions and judgements. The influence of situational variables, social context, and personal conflict should be investigated more thoroughly in real-life circumstances that will permit a better identification of the social and situational determinants. Latane and Darley's studies (*1970*) of bystander apathy, Milgram's (*1965*) efforts to study compliance with authority, and various attempts to investigate conformity, negotiation, compromise, and the "tactics of conflict" in general are indicative of decisions that are not readily explained by statistical decision theory *per se* (*Siegel & Fouraker, 1960; Schelling, 1960*).

Other issues awaiting satisfactory treatment are the tenacity with which individuals often cling to outmoded decisions and choices, the inconsistencies of beliefs and decisions, the rigidities of "groupthink" in policy-making committees, and the improvement of both personal and social decision making in general (Janis & Mann, 1977). ✣

Problem Solving

Experimental psychology has had a special affinity for problem solving. Thorndike's study of trial-and-error learning, Köhler's investigations of insight, Wertheimer's work on productive

thinking and Duncker's studies of problem solving are classic research efforts that can be reviewed with benefit (*Mandler & Mandler, 1964*). Impressionistic or anecdotal writings of problem-solving processes have frequently provided leads and suggestions. Attempts to foster or facilitate problem solving in science, engineering, and industry have given hints and techniques.

Problem solving remains, nonetheless, a process that is poorly understood. Although innumerable efforts have been made to delineate steps or stages by which solutions are reached, many ingenious problem solvers insist that solutions appear more often as a product than a process. Attempts to re-trace the process are unsatisfactory because of distinction that must be made between the solution-in-action and the solution-in-retrospect. Uncertainties persist in the manner by which original solutions are reached and the procedures by which solutions are reconstructed. Virtually all investigators have identified stages or phases of problem solving. Wallas' (*1926*) identification of the four phases of preparation, incubation, inspiration, and verification; Dewey's (*1933*) five stages of: felt needs, problem definition, hypothesis, reasoning, and resolution; and Polya's (*1957*) advice to understand the problem, devise a plan, carry it out, and then re-examine the solution are indicative.

Although computer simulation has facilitated the study of problem solving in terms of information processing, the psychological dimensions of problem solving are not well articulated. The limitations of memory and the weakness of introspective or verbal reports remain difficulties with which investigators must contend. The limits of short-term memory imply that human beings have serious handicaps as information processors and the inconsistencies of retrospection suggest that while human capabilities for storage and retrieval are commendable, the advantages lie with recalling "what" and not in recalling "how" (*Davis, 1973; Simon & Newell, 1972*).

Other difficulties involved in the study of problem solving are the role and functions of hypotheses and cues that might be used in the process. Both are readily deduced from medical diagnoses and clinical judgements, but their interplay in actual

problem solving can be represented only with linear models that have their own limitations. The controversy surrounding clinical-versus-statistical prediction is indicative of both the lack of a theoretical base for problem solving and the difficulties of training for transfer or application (*Sarbin, Taft, & Bailey, 1960*). The development of professional problem solving skills continues to be dependent upon experiential opportunity rather than explicit theory.

Research efforts to deal with problem solving make varying distinctions between discovery and invention, algorithmic and heuristic approaches, and sequential versus transactional models. Discovery is believed to be the grasping of solutions that already exist while invention is thought to produce original or creative outcomes. Algorithmic approaches to a problem solution would involve an exhaustive search that guarantees to produce a final solution. Heuristics approaches represent a great variety of indirect attacks that might be based on hypotheses or be strictly opportunistic. In many respects, the distinction is one of "finding a solution" and "proving a solution" (*Miller, Galanter, & Pribram, 1960*).

Sequential models for problem solving are more likely to be adopted within a framework of scientific and technical rationality where the problem is defined in terms of the stages or steps that must be taken to a satisfactory solution. The process may be quite linear in the sense that step three cannot be taken until step two is completed. Transactional models would apply to political, social, or group solutions involving concessions, redefinitions of the problem, and continuing revisions of the solution.

The extent to which problem solving can be taught as a set of skills and competencies is apparently dependent upon distinctions that are necessary between method and attitude. Scientific method, as a generalized problem solving approach, is evidently more easy to teach than scientific attitude. Method is thought to be a fairly well standardized procedure that is applicable in other situations. Attitude represents a viewpoint or mental stance that might not be applied when other problems and issues are encountered. The inconsistencies of the scientist who has been drawn into the arena of public policy is indicative of this distinction. The efforts of others to adopt an advocate role in

societal and environmental problems is further indication (*Primack & Hippel, 1974*).

Attitude is also a relevant variable in the sense that it is more likely to be regarded as a constraint on problem-solving efforts than method is. Creative problem solving is believed by many researchers to require a release of inhibitions or a freeing of the problem solver's unconscious. Advice given frequently for the facilitation of creative solutions includes the suspension of judgement, the deferring of evaluation, or the withholding of criticism until all potential solutions can be identified (*Adams, 1974*). The intent of such techniques as brainstorming is to generate ideas rather than to judge them. A critical attitude that exerts its influence too soon is thought to be inimical to the process of canvasing solutions (*Clark, 1958; Osborn, 1963*).

Strategies and styles of creative or original problem solving are believed by proponents to be an optimal fusion of technique and attitude. Mental outlook may be as important as mental agility, and innovative solutions are quickly squelched by closed or convergent attitudes. Although numerous strategies for general problem solving are recommended in the problem solving literature, at least four strategies are recurrent enough to identify as: (1) restructuring the problem in more familiar concepts, (2) factoring or subdividing the problem into more manageable components, (3) trying approaches and solutions that contradict what is required or expected, and (4) working backwards from some desired, terminal stage (*Wickelgren, 1974*). The extent to which such strategies are adopted by individuals in personal problem solving, and their effectiveness in dealing with personal problems, are issues greatly in need of further study. ✣

Personal Knowledge

The subjective dimensions of decision making and problem solving imply that the utilities of decision making and the attitudinal variables of problem solving may be dependent upon forms of knowledge that are personal. Research in both areas implies that effective decisions and solutions involve ways of thinking and knowing that cannot be well articulated by participants in

the process. A certain degree of mystery remains not only because of the complexity of decision and problem situations but because of the tacit dimensions of decisions and solutions themselves.

Credence for personal, intuitive, immediate forms of knowledge is found in a diversity of viewpoints in philosophy, psychology, and neurophysiology. The magnitude of the cultural shift represented by these viewpoints suggests a restructuring of the role and function of subjective experience in the derivation and verification of human knowledge. The changing assumptions and values implied by the conceptual shift represent a significant departure from traditional, positivistic modes of knowledge based on scientific and technological rationality.

Michael Polyani (*1964*) has used the example of riding a bicycle to illustrate the differences between explicit and tacit knowing. Human knowledge is based both on explicit inferences for which rules may be set and unconscious inferences for which no rules are permissible. The cyclist knows how to balance the bicycle but does so without calculating the velocity and angle of his turns. The conclusions reached by acts of tacit inference differ greatly from conclusions deduced from explicit premises and demonstrate the presence of at least two levels of awareness.

The duality of consciousness has received sanction from the dual structure of the brain (*Sperry, 1969; Gazzaniga, 1973; Bogen, 1973*). Surgical severance of the corpus callosum is thought to demonstrate the functional differences of the left and right cerebral hemispheres and to dramatize the bimodal nature of consciousness. Dominance of the left hemisphere accompanies right-handedness and mediates such mental functions as linguistic abilities, propositional thought, analytic reasoning, and rationality in general. The right hemisphere is less specialized and is believed to mediate nonverbal, holistic, intuitive functions of mind. The fact that survival is quite possible with a single hemisphere supports the thesis that the brain itself is a dual structure. The specialization or dominance of one hemisphere suggests that mental unity is an illusion and that human beings are fully capable of two distinct modes of knowing and thinking. Abstract, analytic, symbolic thinking—along with speaking, reading, and

writing—is apparently the function of one hemisphere, while impressionistic, immediate, analogic thinking—along with musical and artistic abilities—is the function of the other.

The implications of split brain phenomena have been quickly drawn by those involved in the consciousness revolution. The dichotomies of consciousness have been identified as active versus receptive; intellectual versus sensuous; linear versus nonlinear; sequential versus simultaneous; focal versus diffuse; analytic versus gestalt and, of course, masculine versus feminine; light versus dark; and Yin versus Yang.

Ornstein (*1972*) is among those who see the two modes of consciousness as complementary functions. The dichotomies of consciousness need not be competitive or isolated. Verbal and rational modes can function in cooperation with intuitive, receptive, and holistic modes, with an eventual synthesis of the two. More recently, Sperry (*1977*) has drawn the implications of consciousness-brain relations for subjective values and ethical judgements. He believes conscious experience to have an active, causal role in brain functions. Subjective experience is not a parallel event to brain processes, an epiphenomenon, or simply a consequence; it can be an active, causal determinant. He no longer believes it possible to accept the notion of two separate realms of knowledge—one that is objective and another that is based on subjective values and experience. As consciousness-brain relations are more thoroughly understood, it should be possible to develop a science of values within the context of decision theory. ✣

THE STAGES OF PERSONAL DEVELOPMENT

The implications of differential rationality for personal development may not be obvious or direct. Yet there are more-than-casual reasons to believe human effectiveness in decision making, problem solving, and conflict resolution varies with the stages of individual development that are evident on college and university campuses. There are cogent reasons to believe that both rationality and development are promising concepts for theories or models that would explain what takes place in postsecondary education. The college and the university continue

to be a special environment in which adolescents are promised safe passage to adulthood (*Handlin & Handlin, 1970*). Institutions of higher education are increasingly seen as places where adult development should be encouraged and facilitated. No other social institution has the same commitment, tacit or explicit, to the intellectual, cultural, and humanistic development of individuals.

In recent years, however, the influence of both differential and developmental psychology in higher education has been ambiguous. Efforts to accommodate the diverse needs and expectations of minority and ethnic groups have often assumed that variations in instructional methods and program content were sufficient. This assumption has created banalities such as "if the student hasn't learned, the teacher hasn't taught" and *ad hoc* courses of study that are devoid of structure or integrity. Neither the banalities nor the specious course content gave full consideration to the differential development of the learners. Developmental studies for disadvantaged students proved in too many instances to be merely a euphemism.

Currently, there is a better appreciation of developmental constructs that should serve student needs and institutional purposes. The optimism of the mid-1960s has been tempered by the harsh realities of the intervening years. Many institutions have recognized that graduate and professional education does not prepare all faculty members to teach equally well; this has resulted in a healthy concern for faculty development. Others have been persuaded that competent administrators do not spring fully grown from junior staff positions; this has produced better receptivity to administrative development (*Booth, 1977*). More important, perhaps, a changing job market has convinced many prospective faculty members that teaching skills and interests need not be a detriment to their graduate work. A willingness to teach—and to learn about teaching—now exists that has not always been evident. Concepts of career development that once would have been held in disdain are now openly considered.

The campus function in which developmental concepts have been most welcome, however, may be the area of student

services. As Humphries (*1977*) has pointed out, professional workers in the field became enamored with the concept of student development during the turmoil of the sixties and may view student development as their first line of defense in an era given to retrenchment. Professional consciousness in the area of student personnel has focused, with varying degrees of clarity, on concepts and principles of student development that would ensure the achievement of personal or individual goals. The Tomorrow's Higher Education Project (THE) of the American College Personnel Association, for example, dealt with the increasing heterogeneity of students and their individualistic needs in an effort to reconceptualize the professional responsibilities of student personnel workers. Arner, Peterson, Arner, Hawkins, & Spooner (*1976*) have offered a comprehensive process-outcome model that presumably produces a competent student personnel professional. Cooper (*1975*), among others, has defined the ideal roles of a student development specialist. Crookston (*1975*) sees the student affairs officer as a manager of the milieu in which human development can take place. Harvey (*1976*) believes that higher education will increase its undergraduate emphasis on student development in the future and that student personnel administrators should seek a clearer articulation of student development models. Parker (*1973; 1974*) has been particularly explicit about the need for student development theories and models that would give student personnel work a clear identity, structure those services and activities known as student personnel work, and give relevant assistance in curricular decisions.

Miller and Prince (*1976*) have tied it all together in a comprehensive and highly ambitious approach that integrates developmental thinking in all areas of student affairs. If successfully implemented, a developmental view would permeate all education beyond the high school, focusing directly on student goals and objectives, methods of assessing progress toward those goals, and managerial techniques for organizing a developmental environment in which academic programs and student affairs would be fully merged. ✣

Student Development

Models and theories of student development have been much influenced by the developmental stages, cycles, or phases described by Piaget, Erikson, and other developmental psychologists. Developmental stages or life-cycles are progressive in the sense of representing qualitative changes with increasing age. The sequence of changes is more or less uniform and may be accelerated or retarded by environmental or cultural events but not significantly altered. Each stage or cycle represents a structured or organized experience for the individual and may take the form of an alternation of differentiation and integration.

Developmental models for students in higher education are influenced by the concepts and research findings discussed in Nevitt Sanford's (*1962*) volume on *The American College*. Substance is also drawn from Feldman and Newcomb's (*1969*) extensive survey of the developmental research on college students. Both volumes offer a positivistic view of developmental change within the college setting and suggest that higher education does have a liberalizing effect on the attitudes and values of students. There is appreciable evidence that college graduates become more confident, less dogmatic, more oriented to intellectual values, less prejudiced, better able to handle personal impulses, and less conservative on political issues.

From their survey of the research, Feldman and Newcomb conclude that continued development is one of the goals of a college education. Higher education does offer a means by which adolescents can become adults, but they suggest that the success of any given institution is dependent upon both its internal structure and functions, and the personal characteristics of the students it attracts, admits, and instructs. The generalizations must be qualified; some colleges are good developmental experience for some students; some colleges are not good for some students.

Chickering (*1969*) presents a view of education in which adolescents become adults by developing their competence, emotions, autonomy, identity, interpersonal relations, purpose, and integrity. He believes that colleges can accelerate movement among these "vectors of change", set tasks and conditions that

will provide a bridge from one status to the other—but they can also erect barriers and retard progress. Chickering's views have been much cited in student personnel literature, but he has not been clearly heard in his conclusion that the impact of education is dependent upon the developmental status of the student at entry.

Perry (*1970*), in another frequently cited study, has identified nine stages of intellectual and ethical development in a longitudinal study of Harvard and Radcliffe students. Concepts and values apparently evolve from right-or-wrong, true-or-false distinctions through a phase of skepticism and relativism to an age of commitment where meaningful choices and decisions are made, and a sense of personal style and identity achieved. Eddy (*1977*) may be cited as one observer who questions whether colleges and universities can now claim credit for such progress. He suggests that students may have values in spite of education—not because of it. ✣

Adult Development

The arrival of adult students on college campuses may have left many student development specialists with their models outmoded. As Harrington (*1977*) pointed out, adult students outnumber their younger classmates, and colleges and universities are not only expected to teach them but to help them solve their problems. The popularity of Gail Sheehy's book *Passages* suggested that adults do indeed have problems and that much of adult life is a matter of getting through its predictable crises. The concept of adult development implies, however, that students, young or old, are not the only campus residents undergoing personal development. Hodgkinson (*1974*) has discussed adult development in terms of its relevance for administrators and faculty members who must continue to cope with various crises in the college or university setting. Faculty members continue to make career choices for much of their professional lives. They may often consider options that open with experience and additional preparation, such as administration, and must reconcile the conflicting demands of instruction, research, and public service for purposes of career advancement.

The crises of their thirties and forties do not appear radically different for faculty members and administrators. Marital difficulties, divorce, career crises, personal fears, social inadequacies, professional disappointments, and institutional frustrations are all part of the pattern for many faculty members. The necessities of coping with change may accompany new job opportunities, moving one's family, making community adjustment, and altering inter-personal relations. Identity crises may accompany professional growth and upward mobility, as well as threaten personal aspirations that are inordinate or untimely.

Many administrators and faculty members apparently need assistance in setting new developmental tasks for their professional advancement or renewal—and may experience intense conflict in making decisions that must precede promotions, tenure, salary increases, and new job offerings. Leveling out is a particularly common event on college campuses. Both faculty and administrators demonstrate a perverse form of the "Peter Principle" by becoming incompetent long before they should.

A more positive feature of midlife transitions, or middlescence, may be seen in a series of difficult hurdles that, if cleared, give "a second wind" for accomplishment. In the manner of Toynbee's thesis of challenge-and-response, if severe challenges can be met with sufficient reserves for other challenges, the continued growth and development of the individual may exceed anything experienced previously. If too severe, however, they may wear down any chances for continued development. The closing out of personal and professional options in the later years may pose a more severe threat to personal integrity than any other developmental experience. Many campuses have faculty members and administrators who simply have no place to go. Anything resembling personal development is long past. ✣

SOLUTIONS AND POSSIBLE DECISIONS

Granting a need within higher education to re-emphasize personal development within a framework of rational decision making, problem solving, and conflict resolution, the approaches and procedures that might facilitate such an emphasis poses

several questions. The conflict between curricular and extracurricular approaches has been constant and gives little evidence of easy resolution. The specialization of student personnel administrators is perceived by many academicians to be needlessly narrow, and there continues to be the strained relations of faculty/nonfaculty, tenured/nontenured, teaching/service groups on college and university campuses. The curriculum continues to be the exclusive domain of the faculty in most colleges and student services, whatever their nature, continue to be administered by individuals whose faculty status may be uncertain.

The conflict, past or potential, between formal instruction and experiential learning, traditional and nontraditional study, conventional and alternative learning has not lessened the difficulties of providing service within a setting where instruction is perceived as the only legitimate function. Yet there does seem to be a tendency to either use the curriculum as a means of student development or to devise curricular approaches to developmental objectives (*Tollefson, 1975; Miller & Prince, 1976*). The organization of student development laboratories, mini-courses, and other quasi-curricular approaches has introduced an instructional component that relies on developmental concepts and principles. Many of these efforts have been in response to the new clientele in higher education, but the majority has been a response to new demands by students. Course and laboratory approaches have dealt with such popular, and immediately relevant, topics and issues as human sexuality, human potential, group process, collegiate lifestyles, communication skills, nonverbal communication, race relations, and female potential. Other attempts have dealt more directly with leadership, self-awareness, assertive training, creativity, personal decision making, and academic development. In addition, workshops and seminars have been offered with the themes of inquiry development, inquiry strategies, developing higher level thinking abilities, interpersonal influence, and facilitating inquiry. Such instructional efforts are said to place an emphasis on techniques, to be competency-based, and to include practice in specific competencies.

The disadvantages of such quasi-curricular solutions are thought to be their excessively narrow focus on the student as subject matter, the caliber of professional training and experience on the part of course or lab leaders, and their unintended impact as a counterforce to academic and intellectual development. A more serious reservation may be the extent to which such concepts and techniques are teachable on a college campus. A contradiction may be involved in the sense that some forms of behavior are obviously learned and must be learnable but may not be teachable with the staff, resources, and situation at hand.

The suspicion that many aspects of personal development are not suitable subjects for instruction comes from academic experiences of the past. Legal, technical, economic, and political rationality—as forms of institutionalized decision making and problem solving—are acquired or developed through an extended, often elaborate process of preparation. Standards of professional training and experience are often brought into play with the expectation that common, widely accepted modes of knowing and thinking will be the outcome. Not only is a general body of knowledge expected to be mastered, but specific skills and competencies are thought to be developed through experience in their actual application. Perhaps as much as any single criterion, a professional is someone who thinks like a professional!

Quasi-curricular solutions in higher education are seldom successful in producing a lasting effect on problems and issues that may be perennial. A pattern for such curricular efforts may be seen in previous efforts to deal with critical thinking, personal adjustment, study skills, and reading efficiency. Each has known its moment of popularity in higher education, but each has failed to find a suitable place in the curriculum *per se*, and each has been subject to cycles of erosion and re-discovery. The need for direct instruction in reading and study skills was re-discovered on many campuses with the advent of disadvantaged students. Regardless of whether it was called remedial, developmental, or compensatory studies, the results often demonstrated the difficulties of short-term, quasi-curricular solutions to long-term personal deficiencies.

The history of critical thinking in higher education could be especially informative. Once thought to be an outcome of courses in logic, epistemology, and mathematics, critical thinking was supported by a doctrine of formal discipline that explicitly assumed general skills and competencies as a function of selected courses or academic disciplines. When the doctrine of formal discipline failed, critical thinking was tried as a course in its own right or as a component of courses in self-adjustment. The interest in critical thinking is recurrent. Periodically, its importance is discussed, but few can agree on where or how it should be taught (*Dressel, 1958; Dressel & Lehmann, 1965*).

The broader question might be the extent to which general skills and techniques in decision making and problem solving can be taught. The uses and applications of such skills and techniques may be quite specific for many academic disciplines (*Bloom & Broder, 1950*). Their transfer to other settings and situations is not easily guaranteed, and specialization in all its forms continues to be the bane of general or liberal education.

There is little likelihood then that college students will ever major in personal development, taking both general and specialized courses in decision making, problem solving, and conflict resolution, with eventual certification or licensure as rational persons. There is reason to believe, nonetheless, that the concepts of differential rationality and personal development provide useful insights and perspectives with which to consider many problems and issues in higher education. Rationality is a "solution" that clearly imposes different ways of making decisions, solving problems, and resolving conflicts within higher education. Personal development is a highly significant concept because institutions of higher education have the dual responsibility of producing both rational knowledge and rational people. ✣

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